CLAIMS

What is claimed is:

1. A method of monitoring flatness of an extreme ultraviolet (EUV) lithography mask, comprising:

chucking the EUV mask to a chuck;

scanning the EUV mask with a capacitance probe to generate a first elevation data set for the EUV mask; and

generating a first flatness profile using the first elevation data set.

2. The method according to claim 1, further comprising:

removing the EUV mask from the chuck;

rotating the EUV mask with respect to the chuck;

rechucking the rotated EUV mask to the chuck;

rescanning the rotated EUV mask with the capacitance probe to generate a second elevation data set for the EUV mask; and

generating a second flatness profile using the second elevation data set.

3. The method according to claim 2, further comprising comparing the first flatness profile and the second flatness profile to determine if detected flatness variations rotated with the rotation of the EUV mask.

4. The method according to claim 3, further comprising adjusting a set of electrostatic clamping forces used to retain the EUV mask to the chuck if the detected flatness variations rotated with the rotation of the EUV mask.

5. The method according to claim 1, further comprising:

comparing the first flatness profile against flatness tolerance parameters and;

if the first flatness profile exceeds the flatness tolerance parameters:

removing the EUV mask from the chuck;

checking at least one of the EUV mask and the chuck for contamination;

if contamination is present, cleaning a contaminated area; and

rechucking the EUV mask to the chuck.

6. The method according to claim 5, further comprising:

rescanning the EUV mask with the capacitance probe to generate a second elevation data set for the EUV mask; and

generating a second flatness profile using the second elevation data set.

7. The method according to claim 6, further comprising comparing the first flatness profile and the second flatness profile.

8. The method according to claim 5, further comprising:

rotating the EUV mask with respect to the chuck before rechucking the EUV mask;

rescanning the rotated EUV mask with the capacitance probe to generate a second elevation data set for the EUV mask; and

generating a second flatness profile using the second elevation data set.

9. The method according to claim 8, further comprising comparing the first flatness profile and the second flatness profile to determine if detected flatness variations rotated with the rotation of the EUV mask.

10. The method according to claim 9, further comprising adjusting a set of electrostatic clamping forces used to retain the EUV mask to the chuck if the detected flatness variations rotated with the rotation of the EUV mask.

11. A method of monitoring flatness of an extreme ultraviolet (EUV) lithography mask, comprising:

chucking the EUV mask to a chuck;

scanning the EUV mask to generate a first flatness profile;

removing the EUV mask from the chuck;

rotating the EUV mask with respect to the chuck;

rechucking the rotated EUV mask to the chuck; and

rescanning the rotated EUV mask to generate a second flatness profile.

12. The method according to claim 11, further comprising comparing the first flatness profile and the second flatness profile to determine if detected flatness variations rotated with the rotation of the EUV mask.

13. The method according to claim 12, further comprising adjusting a set of electrostatic clamping forces used to retain the EUV mask to the chuck if the detected flatness variations rotated with the rotation of the EUV mask.

14. A system for monitoring flatness of an extreme ultraviolet (EUV) lithography mask, comprising:

a mask platen assembly including a chuck with a mask mounting surface for receiving the EUV mask and electrostatically retaining the EUV mask to the chuck;

a capacitance probe for scanning the EUV mask to generate elevation data for the EUV mask; and

a controller for receiving the elevation data and generating a flatness profile using the elevation data and for controlling the electrostatic clamping forces of the mask platen assembly.

15. The system according to claim 14, wherein the controller executes logic to:

conduct a first scan of the EUV mask to generate a first flatness profile and, following a rotation of the EUV mask, conduct a second scan of the EUV mask to generate a second flatness profile; and

compare the first flatness profile and the second flatness profile to determine if detected flatness variations rotated with the rotation of the EUV mask.

16. The system according to claim 15, wherein the controller executes logic to adjust a set of electrostatic clamping forces used to retain the EUV mask to the chuck if the detected flatness variations rotated with the rotation of the EUV mask.